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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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NIXON & VANDERHYE, PC  
901 NORTH GLEBE ROAD, 11TH FLOOR  
ARLINGTON, VA 22203

EXAMINER
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PASTERCZYK, JAMES W

ART UNIT	PAPER NUMBER
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1755

DATE MAILED: 09/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/731,446

Applicant(s)

CHAUDHARI ET AL.

Examiner

J. Pasterczyk

Art Unit

1755

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 10 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) 12-23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-23 are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

Art Unit: 1755

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-11, drawn to a catalyst and method of making it, classified in class 502, subclass 167.
- II. Claims 12-23, drawn to methods of making ketones and organic acids, classified in class various depending on what specie is actually made, subclass various for the same reasons.

2. The inventions are distinct, each from the other because:

Inventions I and II are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case the process for using the product as claimed can be practiced with another materially different product, such as a homogeneous catalyst or with stoichiometric reagents.

3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

4. During a telephone conversation with Larry Nixon, Esq., on 5/25/05, a provisional election was made with traverse to prosecute the invention of group I, claims 1-11. Affirmation of this election must be made by applicant in replying to this Office action. Claims 12-23 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Art Unit: 1755

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

6. Claims 2-11 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The blocking agent is recited as blocking only exterior sites from reacting with the silyl amino compound, yet it appears as if other than location the interior sites are chemically identical to the exterior sites, hence it is not clear how only the exterior sites can be blocked.

7. Claims 1-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 1 and 2, the designations "inner surface" and "outer surface" are relative, yet to what they relate is not disclosed or recited in the claims, nor is the identity of the object whose surfaces are being discussed recited. Also in these two claims, the two oxygen atoms on the silicon atom appear to have dangling valences while the third has a bond floating off into space, hence it is not clear if and to what these atoms are bonded; if they are not bonded to something then they are merely dangling valences. As now written the nitrogen atoms of the linking group also have at least one dangling valence since only one covalent bond is shown, the other being

Art Unit: 1755

only dative, leaving at most two valencies unbonded. The obsolete terminology VIII is used when the current nomenclature is 8-10 for the iron/cobalt/nickel series of transition metals. Use of “organometallic complex” suggests that there is necessarily a M-C bond, which is what defines organometallic compounds. Both L and x are undefined. Finally, reciting that n is an integer with a value between 2 and 6 means that 2 and 6 are excluded; this does not appear to be the intent of the language, but it is the effect.

Further in claim 2, text line 5, “unperturbed” seems to be poor word choice. In l. 6 the functionalized silane appears to require a terminal amino group of some sort, yet this is not recited in the claim. In formula II the M-N and M-O bonds as drawn are covalent, yet it is not clear how these bonds are to be cleaved to make the supported material; also the P-M bond should be drawn as a dative bond with an arrow from the P to the M atom, and the waters of hydration should be shown with a dot midline between the bracket and the coefficient n. It is not clear what part of formula II if any corresponds to the  $ML_x$  moiety in formula I, other than the M atom. In text line 8 the coefficients on the R groups should be subscripted to be consistent with those in formula II; in l. 9 delete “selected from” and change “and” to --or--; it is not clear what an “arylalkylcycloaromatic group (sic)” is. In l. 12 insert --and-- between “Br,” and “I”; the formula for the semilabile group is inconsistent with that in the structural formula; in l. 13 it is not clear if applicants intended to exclude 1 and 10 from the values n may take.

Claim 3 would be better phrased --A process as claimed 2 wherein the solid matrix comprises a material selected from microporous Zeolite Y, Zeolite B, ZSM-5 and mesoporous MCM-41 and MCM-48.--. The term “etc.” is omnibus and renders the claim’s scope indefinite per se.

Art Unit: 1755

In claim 4 it is not clear what is meant by “purely siliceous”.

In claim 5 delete “used for blocking of the exterior surface” as prolix, in l. 3 delete the I from the formula and change “any” to --an--, and in l. 4 “etc.” is again omnibus and insert --the group consisting of-- after “selected from”.

In claim 6, l. 1, “the solvent system” lacks antecedent basis, and in l. 3 correct the spelling of methanol.

In claim 7, l. 2, correct the spelling to complex and matrix respectively, and delete all from “is a functionalized” to “silicon atom,” in l. 4 as prolix. Also in l. 4 R is undefined. In the last line saying integers are between two other integers literally means those bounding integers are not members of the group the integers may be.

In claim 8, l. 2, delete “above” as prolix, the formula for the ligand is inconsistent with that in the structural formula, delete all after “a semilabile . . .” as redundant and prolix. It is not clear that the formulas after the first two are all carboxylates, and again it is not clear if n may also be one and ten.

In claim 10, l. 1, superscript the coefficients on the R groups, and in l. 2 delete “(OTs)” and again the ligand formula is inconsistent with that in the structure.

In claim 11 insert --the group consisting of-- after “selected from” and make Propanol lower case.

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over USP 6,251,280 (hereafter referred to as Dai).

Dai discloses the present invention substantially as claimed (abstract; figures 1A-3; col. 2, l. 29-45; col. 4, l. 55 to col. 5, l. 11; col. 6, l. 33-48).

Dai lacks disclosure that the transition metal compound bound to the amino functionalized surface tethering group is an organometallic complex.

However, one of ordinary skill in the art, seeing the range of metals that could be bonded to the amino group, would have considered it conventional to bind a late transition metal organometallic complex to the dangling amino group of the prior art.

It would have been obvious to one of ordinary skill in the art to apply that skill to the disclosure of Dai with a reasonable expectation of obtaining a highly-useful composition and method of making it with the expected benefit of being able to bind transition metal ions within the pores of a sorbent molecule.

10. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP-1085141 (hereafter referred to as JP).

JP discloses preparing a noble metal catalyst by reacting silica with an amine having siloxy groups at the other end of a methylene chain, then reacting this product with a noble metal salt.

JP lacks disclosure that the noble metal compound may be an organometallic, or that some surface of the silica is blocked from reaction with the amino methylene siloxy compound.

However, many noble metal compounds are organometallic, and use of blocking groups to direct reactivity away from a particular site is conventional in synthetic organic chemistry.

Art Unit: 1755

It would have been obvious to one of ordinary skill in the art to apply that skill to the disclosure of JP with a reasonable expectation of obtaining a highly-useful supported catalyst and method of making it with the expected benefit of having a high density of the noble metal on the surface of the silica support.

11. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gryaznov et al., USP 4,394,294 (hereafter referred to as Gryaznov).

Gryaznov discloses the invention substantially as claimed (abstract; examples).

Gryaznov lacks disclosure of using an organometallic compound bonded to the tethering amino group.

However, one of ordinary skill in the art would have known that organometallic palladium compounds are well-known as catalysts and hence may have been useable as the palladium source in the prior art.

It would have been obvious to one of ordinary skill in the art to apply that skill to the disclosure of Gryaznov with a reasonable expectation of obtaining a highly-useful catalyst and method of making it with the expected benefit of making the catalyst in the form of a membrane.

12. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pugin and Miller, Heterogeneous Catalysis and Fine Chemicals III, Guisnet et al. eds., Elsevier 1993, pp. 107-114 (hereafter referred to as Pugin).

Pugin discloses the invention substantially as claimed (p. 108, structure; p. 112, "Influence of Loading and Pore Size").

Pugin lacks disclosure that only a nitrogen atom binds to the late transition metal species.



Art Unit: 1755

However, it is conventionally known that nitrogen containing Lewis base ligands are quire capable of binding to late transition metal moieties.

It would have been obvious to one of ordinary skill in the art to apply that skill to the disclosure of Pugin with a reasonable expectation of obtaining a highly-useful heterogeneous catalyst and method of making it with the expected benefit of high selectivity.

13. The examiner notes that many references are cited by applicants in their specification, yet none has been provided to the PTO. Applicants are reminded of their duty to disclose under 37 CFR 1.56.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to J. Pasterczyk whose telephone number is 571-272-1375. The examiner can normally be reached on M-F from 9 to 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo, can be reached at 571-272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



J. Pasterczyk



J.A. LORENGO  
SUPERVISORY PATENT EXAMINER